

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,716	06/06/2001	Devendra Vidhani	03226.110001;P6194	7131
32615	7590	06/03/2004	EXAMINER	
OSHA & MAY L.L.P./SUN 1221 MCKINNEY, SUITE 2800 HOUSTON, TX 77010			KANG, INSUN	
			ART UNIT	PAPER NUMBER
			2124	

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/875,716	<b>Applicant(s)</b> VIDHANI ET AL.	
	<b>Examiner</b> Insun Kang	<b>Art Unit</b> 2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2001 and 25 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/62001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/25/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2124

### **DETAILED ACTION**

1. This action is responding to application papers dated 6/6/2001 and 11/25/2003.
2. Claims 1-41 are pending in the application.

### ***Specification***

3. Claims 1-41 are objected to because of the following informalities: claim numbering needs to be changed as: "[c1]" to 1, for example. Appropriate correction is required.

### **Content of Specification**

4.

Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:

- (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
- (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

The Background section in the instant application does not contain a statement of field of the invention. Appropriate action is required.

### ***Claim Rejections - 35 USC § 101***

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-15, 26-31 and 37-39 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-15, 26-31 and 37-39 are non-statutory because they are directed to a method without recitation of a computer or a computer-readable medium embodying the method in order to produce a "useful, concrete and tangible result." The claims merely recite a "method" that is disembodied arrangement without creating any functional interrelationship, either as part of the stored data or as part of the computing processes performed by the computer ("acts") or computer readable medium so as to enable the computer to perform the claimed steps of method for "finding a worst case aggressor set of a victim net," for "solving a problem to find a worst case aggressor net" and for "formulating a program" as recited.

Thus the claims represent functional descriptive material that is not capable of producing a useful result, and hence represent only abstract ideas. Therefore, the claims are non-statutory.

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 2124

8. Claims 1-13, 16-18, 21-29, 32-34 and 37-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Carlson et al. (US Patent 6,128,769) hereinafter referred to as "Carlson."

Per claim 26:

Carlson discloses:

- solving a problem to find a worst case aggressor net based on a logically exclusive set ("reducing the noise problems induced by cross-talk by determining the worst case peak cross-talk noise experienced by a signal due to cross-coupling capacitances to other signals," col 1 lines 5-14; "perform ...logic filtering, cross-talk attacker filtering," col 3 lines 4-8)
- using a first representation to represent the logically exclusive set, selecting the first representation ("performing cross-talk-attacker filtering on a plurality of signal lines to identify a first set of potential attacker signals on a first set of potential attacker signal lines that cause signal noise upon said victim signal," col 2 lines 3-12)
- selecting a second representation, wherein the second representation represents an adjacent net of the first representation ("a second set of potential attacker signals on a second set of potential attacker signal lines that cause signal noise upon the victim signal line," col 2 lines 3-12)
- removing an association of the first representation, removing the first representation ("filtering on a plurality of signals signal lines to identify a first set of potential attacker signals on a first set of potential attacker signal lines," col 2 lines 3-12)

Art Unit: 2124

-removing an association of the second representation, removing the second representation ("filtering on a plurality of signals signal lines to identify a second set of potential attacker signals on a second set of potential attacker signal lines," col 2 lines 3-12)

-retuning the adjacent net represented by the second representation as the worst case aggressor net ("the worst set of active attackers (the ones with the worst noise) are determined," col 9 lines 12-25)  
as claimed.

Per claim 27:

The rejection of claim 26 is incorporated, and further, Carlson discloses that the first representation is a first node, and wherein the second representation is a second node ("a first attacker signal cross-talks with the victim signal and causes a signal noise spike upon the victim node," col 4 lines 18-25) as claimed.

Per claim 28:

The rejection of claim 26 is incorporated, and further, Carlson discloses that the association of the first representation is an edge, and wherein the association of the second representation is an edge (col 5 lines 56-65) as claimed.

Per claim 29:

The rejection of claim 26 is incorporated, and further, Carlson discloses that the adjacent net represented by the second representation has a weight greater than another net in the problem (col 9 lines 40-67) as claimed.

Per claim 34, they are the software tool versions of claim 29, respectively, and are rejected for the same reasons set forth in connection with the rejection of claim 29 above.

Per claim 38:

See the rejection of claim 27 above.

Per claim 39:

See the rejection of claim 28 above.

Per claims 40 and 41, they are the software tool versions of claim 32 and 37, respectively, and are rejected for the same reasons set forth in connection with the rejection of claim 32 and 37 above.

Per claim 1:

Carlson discloses:

-finding a worst case aggressor set of a victim net based on a plurality of logically exclusive sets ("reducing the noise problems induced by cross-talk by determining the worst case peak cross-talk noise experienced by a signal due to cross-coupling capacitances to other signals," col 1 lines 5-14; "perform ... logic filtering, cross-talk attacker filtering," col 3 lines 4-8)



Art Unit: 2124

-forming a first set, wherein the first set comprises an aggressor net of the victim net("performing cross-talk-attacker filtering on a plurality of signal lines to identify a first set of potential attacker signals on a first set of potential attacker signal lines that cause signal noise upon said victim signal," col 2 lines 3-12)

-using the first set and the plurality of logically exclusive sets to formulate a problem; solving the problem to determine a worst case aggressor net of the victim net, wherein the worst case aggressor set comprises the worst case aggressor net("reducing the noise problems induced by cross-talk by determining the worst case peak cross-talk noise experienced by a signal due to cross-coupling capacitances to other signals," col 1 lines 5-14; "perform ...logic filtering, cross-talk attacker filtering," col 3 lines 4-8) as claimed.

Per claim 2:

The rejection of claim 1 is incorporated, and further, Carlson discloses:

the plurality of logically exclusive sets comprises a mutually exclusive set, and wherein the mutually exclusive set comprises a signal net (col 3 lines 9-27) as claimed.

Per claim 3:

The rejection of claim 1 is incorporated, and further, Carlson discloses:

the aggressor net in the first set has a corresponding weight(col 9 lines 40-67) as claimed.

Art Unit: 2124

Per claim 4:

The rejection of claim 1 is incorporated, and further, Carlson discloses:

finding the worst case aggressor net of the victim net (col 1 lines 5-14) as claimed.

Per claim 5:

The rejection of claim 1 is incorporated, and further, Carlson discloses:

-forming a second set, wherein the second set comprises an aggressor net that is in the first set and that is part of the plurality of logically exclusive sets ("a second set of potential attacker signals on a second set of potential attacker signal lines that cause signal noise upon the victim signal line," col 2 lines 3-12) as claimed.

Per claim 6:

The rejection of claim 5 is incorporated, and further, Carlson discloses:

-forming a third set, wherein the third set comprises an aggressor net that is in the first set but is not part of the second set (col 9 lines 12-25) as claimed.

Per claim 7:

The rejection of claim 6 is incorporated, and further, Carlson discloses:

the aggressor net in the third set becomes part of the worst case aggressor set ("the highest Delta C Value is chosen as the worst case Delta C Value," cl 6 lines 55-64; col 9 lines 12-25) as claimed.

Per claim 8:

The rejection of claim 5 is incorporated, and further, Carlson discloses:

-reducing each of the plurality of logically exclusive sets to a second plurality of logically exclusive sets such that a net in a set of the second plurality of logically exclusive sets is part of the second set ("reducing the noise problems induced by cross-talk by determining the worst case peak cross-talk noise experienced by a signal due to cross-coupling capacitances to other signals," col 1 lines 5-14; "perform ... logic filtering, cross-talk attacker filtering," col 3 lines 4-8) as claimed.

Per claim 9:

The rejection of claim 8 is incorporated, and further, Carlson discloses that an empty set in the second plurality of logically exclusive sets is removed from the second plurality of logically exclusive sets ("filtering on a plurality of signal lines to identify a first set of potential attacker signals on a first set of potential attacker signal lines that cause signal noise upon said victim signal, performing safety window filtering on a plurality of signals signal lines to identify a second set of potential attacker signals on a second set of potential attacker signal lines that cause signal noise upon the victim signal," abstract) as claimed.

Per claim 10:

The rejection of claim 1 is incorporated, and further, see the rejection of claim 37 above.

Art Unit: 2124

Per claim 11:

The rejection of claim 10 is incorporated, and further, see the rejection of claim 38 above.

Per claim 12:

The rejection of claim 10 is incorporated, and further, see the rejection of claim 39 above.

Per claim 13:

The rejection of claim 10 is incorporated, and further, see the rejection of claim 29 above.

Per claims 16-25, they are the software tool versions of claim 2, 3,7,8, 10 and 13, respectively, and are rejected for the same reasons set forth in connection with the rejection of claim 2, 3,7,8, 10 and 13 above.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 14, 15, 19, 20, 30, 31, 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. (US Patent 6,128,769) hereinafter referred to as "Carlson" as applied to claim 1-13, 16-18, 21-29, 32-34 and 37-41 above.

Per claim 31:

Art Unit: 2124

The rejection of claim 26 is incorporated, and further, Carlson does not explicitly teach a bipartite graph. However, Official Notice is taken that a bipartite graph was known in the art of software development and graphical modeling, at the time applicant's invention was made, to decompose two disjoint sets such that no two graph vertices within the same set are adjacent. It would have been obvious for one skilled in the art of computer software development and graphical modeling to modify Carlson's disclosed system to use a bipartite graph. The modification would be obvious because one skilled in the art would be motivated to easily represent the "cross-talk attacker filtering" between various sets.

Per claim 30:

The rejection of claim 26 is incorporated, and further, see the rejection of claim 31 above.

Per claim 14:

The rejection of claim 1 is incorporated, and further, see the rejection of claim 31 above.

Per claim 20 and 36:

The are the software tool versions of claim 31, respectively, and are rejected for the same reasons set forth in connection with the rejection of claim 32 above.

Per claim 15:

Art Unit: 2124


The rejection of claim 12 is incorporated, and further, see the rejection of claim 31 above.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Insun Kang whose telephone number is 703-305-6465. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on 703-305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

IK  
5/27/2004

  
KAKALI CHAKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100